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TOP SECRET 162305Z SEP 68 CITE [] 4592.

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SECTION ONE OF THREE

CORONA

REF: A. [] 17 AUG 68
 B. [] 25 AUG 68
 C. [] 16 AUG 68
 D. [] 24 AUG 68

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SUBJ: MISSION 1104 PHOTOGRAPHIC EVALUATION INTERIM REPORT (PEIR)

1. NUMERICAL SUMMARY

MSN NO AND DATES: 1104-1, 7-14 AUG 1968
 1104-2, 14-22 AUG 1968
 LAUNCH DATE AND TIME: 7 AUG 1968/2137Z
 VEHICLE NUMBER: 1644
 CAMERA SYSTEM: CR4
 PAN CAMERA NO: FORWARD LOOKING, 309
 AFT LOOKING, 308

DISIC CAMERA NO: 7
 STELLAR LENS NOS: 10P, 8
 TERRAIN LENS NO: 107

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RECOVERY REVS: MSN 1104-1, 115
 MSN 1104-2, 244

2. CAMERA SETTINGS

FWD LOOKING

WRITTEN 25 FILTER (PRIMARY).
 WRITTEN 15 FILTER WITH A 0.9 DENSITY INCONEL
 COATING (ALTERNATE). SLIT WIDTHS: 0.199, 0.232, 0.298,
 0.298, 0.298 AND A FAIL SAFE SLIT OF 0.240 INCH LAS 4
 WRITTEN 21 FILTER (PRIMARY). SF05 (MODIFIED DIA-114
 WRITTEN 57) FILTER (ALTERNATE). SLIT WIDTHS: SPAD
 0.151, 0.163, 0.205, 0.256, AND A FAIL SAFE
 SLIT OF 0.210 INCH

AFT LOOKING

3. PERFORMANCE SUMMARY:

THE OVERALL IMAGE QUALITY OF MISSION 1104 IS THE BEST YET
 OBTAINED FROM THE CORONA SYSTEM. THE PHOTO INTERPRETERS REPORTED,
 "THE PHOTO-INTERPRETABILITY OF MISSION 1104 IS GENERALLY GOOD WHEN
 NOT DEGRADED BY ATMOSPHERICS. THE BEST OF THE FORWARD CAMERA RECORDANCE OF
 IS RATED AS BEING VERY GOOD. THE BEST OF AFT CAMERA PHOTOGRAPHY IS SANITIZED
 ALSO GOOD BUT NOT AS GOOD AS THAT OF THE FORWARD". THE PET WITH TEXT
 CONCURS IN THIS OBSERVATION. THIS IS ATTRIBUTABLE TO THE FACT THAT
 THE FWD LOOKING CAMERA USED, FOR THE FIRST TIME, A THIRD GENERATION

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LENS (SEE PARA C OF COMMENTS SECTION). THE BEST RESOLUTION READ
 FROM A MOBILE CORN TARGET WAS FIVE FEET IN THE FLIGHT DIRECTION.
 THE PHOTO INTERPRETERS REPORTED, "THE OVERALL CLOUD COVER ESTIMATE
 OF 20 PERCENT (REPORTED IN REFERENCE C AND D) FAILS TO REFLECT THE
 PERCENTAGE OF CLOUD COVER OR DEGRADING ATMOSPHERICS IN THE PRIME
 TARGET AREAS. THERE IS GENERALLY A HIGH INCIDENCE OF CLOUD COVER IN
 THE AREAS OF INTELLIGENCE INTEREST".

4. PAN CAMERA ANOMALIES:

A. ANOMALY: THE STARBOARD HORIZON SHUTTER ON THE FWD LOOKING
 CAMERA FAILED TO CLOSE DURING FILM TRANSPORT ON FRAME 66 OF PASS
 D74 AND FRAME 29 OF PASS D155.

CAUSE: A MALFUNCTION OF THE STARBOARD HORIZON CAMERA SHUTTER
 ON THE FWD LOOKING CAMERA CAUSED IT TO REMAIN OPEN DURING THE FILM
 METERING CYCLE. THE RESULT IS HEAVY FOGGING IN TWO FRAMES FOR EACH
 OCCURRENCE OF THE ANOMALY. THIS IS THE NORMAL MODE OF FAILURE FOR
 THIS DEVICE, I.E., TO FAIL OPEN FOR ONE HORIZON CAMERA SHUTTER CYCLE

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	PROD	
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	WEST	
	PAFF	
	MSB	
	DIR-114	
	SPAD	
	DEAL-114	
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 Excluded from automatic
 downgrading and
 declassification

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(EQUAL TO TWO MAIN INSTRUMENT CYCLES) AND THENCE TO CLOSE ON THE NEXT H.O. SHUTTER COMMAND.

ACTION: THIS PROBLEM HAS BEEN EXTENSIVELY STUDIED IN THE PAST. THE PROBABILITY OF A LONG TERM OPEN FAILURE (MORE THAN ONE H.O. CAMERA CYCLE) IS CONTRARY TO THE FAILURE MODE. NO FURTHER ACTION REQUIRED.

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B. ANOMALY: FOG PATTERNS ARE PRESENT ON THE SEVENTH FROM LAST FRAME OF THE FWD LOOKING CAMERA AND ON THE SIXTH FROM LAST FRAME ON THE AFT LOOKING CAMERA FOR MOST OPERATIONS THROUGHOUT THE 1104-1 MISSION.

CAUSE: THE FOG EXPERIENCED IN THE 1104-1 MISSION IS ATTRIBUTED TO A LIGHT LEAK IN THE VICINITY OF THE 1104-1 RECOVERY SYSTEM COVER. THIS LEAK WAS OBSERVED IN PRE-FLIGHT TESTING, BUT SUBSEQUENT ATTEMPTS TO IDENTIFY THE SOURCE WERE UNSUCCESSFUL.

ACTION: TESTING PROCEDURES WILL BE REVIEWED AND MODIFIED IF APPROPRIATE TO FURTHER REDUCE THE PROBABILITY OF FOREBODY LIGHT LEAKS. (MONITOR: [REDACTED])

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C. ANOMALY: THERE WAS FOG PRESENT ON THE SECOND FROM LAST FRAME OF SOME OPERATIONS IN THE 1104-2 MISSION.

CAUSE: THE FOG OCCURRING IN THE 1104-2 MISSION IS THE RESULT OF AN APPARENT LIGHT LEAK FROM AN UNIDENTIFIED ORIGIN IN THE MAIN BARREL STRUCTURE. THIS LEAK WAS NOT OBSERVED IN PRE-FLIGHT TEST.

ACTION: A CR SYSTEM WILL BE EXAMINED TO IDENTIFY THE ORIGIN OF THE 1104-2 LIGHT LEAK AND APPROPRIATE PREVENTIVE ACTION TAKEN FOR FUTURE SYSTEMS. (MONITOR: [REDACTED])

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D. ANOMALY: ON THE TAKE-UP END OF THE FIRST FRAME ON BOTH CAMERAS, A SMALL (ONE INCH SQUARE, MAXIMUM) START-UP CORONA MARK WAS OCCASIONALLY DETECTED. IN ALL CASES THE MARKING WAS VERY MINOR WITH NO LOSS OF IMAGERY. AN ENTIRELY NEW PATTERN, WHICH ON THE O.N. LOOKS LIKE PENCIL MARKS THAT ON OCCASION SEPARATE OR FORK, WAS OBSERVED ON PASS D169 STARTING WITH FRAME 24 AND STOPPING PRIOR TO THE LAST TWO FRAMES. EVIDENCE INDICATES THIS MARKING IS ASSOCIATED WITH CAMERA OPERATION BUT NOT WITH THE CAMERA FRAMING. THE MARKING DID NOT DEGRADE IMAGERY USEFULNESS.

THE PMU WAS NOT OPERATING WHILE DOMESTIC PASSES OF 1104-1 WERE BEING EXPOSED AND WHILE MOST OF THE FILM TYPE 3404 ON 1104-2 WAS BEING EXPOSED. NO CORRELATION WAS OBSERVED BETWEEN PMU ON/OFF TIMES AND INCIDENCE OF CORONA MARKING ON 3404. DURING PRE-FLIGHT HIVOS TESTING, THE 3404 FILM WAS FREE OF MARKING WHEN THE PMU WAS OFF.

ACTION: ACTION IS BEING TAKEN TO ASSURE TROUBLE-FREE OPERATION OF THE PMU (SEE PARA 7B-1).

E. ANOMALY: THE LENS STOWED IN THE CENTER OF FORMAT POSITION AT THE TERMINATION OF PASS A103E. AS A RESULT ONLY ONE-HALF OF THE LAST FRAME OF PASS A103E WAS EXPOSED DURING THIS CAMERA OPERATION, WHILE THE REMAINDER OF THE FRAME WAS EXPOSED AT THE START OF OPERATIONS ON D103.

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CAUSE: AN UNIDENTIFIED MALFUNCTION OF THE STOW SWITCH CAUSED THE INSTRUMENT TO STOP IN THE VICINITY OF CENTER OF FORMAT DURING THE STOW CYCLE. THIS ANOMALY CAUSED NO LOSS OF INTELLIGENCE INFORMATION.

ACTION: NO ACTION REQUIRED.

5. DISIC CAMERA PERFORMANCE:

A. THE STELLAR CAMERAS FUNCTIONED PROPERLY THROUGHOUT THE MISSION AND RECORDED A FULL FIELD OF STARS ON BOTH THE PORT AND STARBOARD CAMERAS. MOST STARBOARD FRAMES HAVE GREATER THAN 100 STAR IMAGES; MOST PORT FRAMES CONTAIN MORE THAN 70 STAR IMAGES. STARS ARE RECORDED AS POINT IMAGES.

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B. THE TERRAIN CAMERA IMAGE QUALITY IS GOOD AND COMPARES FAVORABLY WITH MISSION 1103 TERRAIN IMAGERY.

6. DISIC ANOMALIES:

A. ANOMALY: PRESSURE MARKS OUTSIDE THE FORMAT OF THE STELLAR RECORD. THESE MARKS ARE PRESENT IN THE BORDERS ALONG BOTH FILM EDGES OF THE ENTIRE STELLAR RECORD. NEITHER THE FORMATS NOR DATA RECORDINGS ARE AFFECTED.

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CAUSE: SKEW BEADS. THIS IS A SYSTEM CHARACTERISTIC THAT IS NOT CONSIDERED OBJECTIONABLE AS LONG AS THE MARKS ARE CLEAR OF THE FORMATS AND DATA.

ACTION: NONE

B. ANOMALY: MINUS DENSITY SPOTS ON FRAMES WHICH APPEAR TO BE CAUSE BY DIRT ON THE RESEAU PLATE.

CAUSE: DIRT AND FILM/EMULSION PARTICLES CARRIED TO THE FOCAL PLANE PLATE BY THE FILM.

ACTION: CONTINUED ATTENTION TO CLEANLINESS PRIOR TO FLIGHT. PARTICLES CARRIED BY FILM CANNOT BE COMPLETELY ELIMINATED.

C. ANOMALY: TERRAIN SLP DATA VARIED IN DENSITY FROM NORMAL TO NON-EXISTENT. REDUNDANT DATA PROVIDED ON STELLAR RECORD WERE MACHINE READABLE THROUGHOUT THE MISSION. SINCE TERRAIN DATA ARE REDUNDANT TO STELLAR DATA, NO STELLAR-TERRAIN SET IS MISSING TIME DATA.

CAUSE: INTERMITTENT AND IMPROPER SEATING OF THE SLP HEAD DURING EXPOSURE MOST LIKELY RESULTED FROM A VARIATION IN SLP CABLE POSITION.

ACTION: INCLUSION OF SLP CABLE TIE-DOWN CHECK IN FIELD TEST PROCEDURE. INVESTIGATION OF IMPROVED SLP CABLE TIE-DOWN (MONITOR:

D. ANOMALY: ON THE STELLAR RECORD, FOG IS PRESENT -- IN THE FORM OF EQUIPMENT SHADOW GRAPHS -- ON THE 6TH, 7TH, AND 8TH FRAME BEFORE EACH PORT CAMERA START OF PASS FRAME. THESE FOG PATTERNS VARY IN DENSITY FROM LIGHT TO VERY HEAVY, COMMENSURATE WITH CAMERA SIT PERIODS, AND IN SOME INSTANCES OBSCURE IMAGERY.

CAUSE: THE MOST LIKELY CAUSE APPEARS TO BE A LIGHT LEAK THROUGH THE "PATIO PIN" HOLE. THIS HOLE IS PLUGGED BY A SCREW PRIOR TO FLIGHT.

ACTION: SPECIFIC CHECK OUT OF "PATIO PIN" HOLE SEALING HAS BEEN ADDED TO WRITTEN FIELD TEST PROCEDURES.

E. ANOMALY: SOME PORT FRAMES CONTAIN A PLUS DENSITY STREAK APPROXIMATELY 0.25 INCH LONG AND 0.1 INCH WIDE NEAR THE CENTER OF THE FORMAT. THIS PLUS DENSITY STREAK APPEARS INTERMITTENTLY THROUGHOUT THE STELLAR CAMERA RECORD. DEGRADATION TO THE IMAGERY IS MINOR.

CAUSE: THIS SMALL MARK CORRELATES IN INTENSITY, GEOMETRY, AND FREQUENCY OF OCCURRENCE WITH THE SIT PERIOD FOG NOTED IN D, ABOVE. IT IS CONCLUDED THAT THIS MARK IS ADDITIONAL FOG RESULTING FROM THE LIGHT LEAK DESCRIBED IN ITEM D, ABOVE.

ACTION: SAME AS ABOVE, D.

F. ANOMALY: DENDRITIC AND CORONA TYPE FOG PATTERNS ARE PRESENT ON THE STELLAR CAMERA RECORD. IN SOME INSTANCES THESE FOG PATTERNS ENTER THE FORMAT AREA, HOWEVER, DEGRADATION TO THE IMAGERY IS MINOR.

CAUSE: THESE MARKS EMANATE FROM THE FILM EDGE. THIS IS CHARACTERISTIC OF UNSPOOLING OR ROLLER FLANGE DISCHARGE. FREQUENCY AND SEVERITY ARE MINOR. SOME CORRELATION BETWEEN MARKING AND PMU OFF PERIODS WAS NOTED.

ACTION: NO SPECIFIC ACTION IS PLANNED BEYOND THE CURRENT MARKING FIXES INCORPORATED IN DOWN-STREAM UNITS.

G. ANOMALY: DENDRITIC AND CORONA TYPE STATIC IS PRESENT OCCASIONALLY THROUGHOUT THE TERRAIN CAMERA RECORD, PRIMARILY TOWARDS

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THE END OF 1104-2. IN SOME INSTANCES THESE STATIC MARKINGS ARE PRESENT IN THE CENTER OF THE FILM AREA.

CAUSE: A FEW MARKS EMANATE FROM THE FILM EDGE. THIS IS CHARACTERISTIC OF UNSPOOLING OR ROLLER FLANGE DISCHARGE. FREQUENCY AND SEVERITY ARE MILD. THOSE MARKS PRESENT IN THE

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CENTER OF THE FILM AREA APPEAR TO BE A COMBINATION OF DENDRITIC AND CORONA DISCHARGE AND ARE OF LOW FREQUENCY AND DENSITY. THE SPECIFIC CAUSE CAN NOT BE DETERMINED AT THIS TIME.

ACTION: NO SPECIFIC ACTION IS PLANNED BEYOND THE CURRENT MARKING FIXES INCORPORATED IN DOWN-STREAM UNITS.

H. ANOMALY: THE FIRST FRAME OF MOST STELLAR CAMERA OPERATIONS IS GROSSLY OVEREXPOSED AND OF HEAVY DENSITY.

CAUSE: THIS IS NORMAL CAMERA OPERATION. DISIC HAS NO STAND-BY MODE WHERE MOTORS ARE BROUGHT UP TO SPEED. AS A CONSEQUENCE, THE NORMAL MOTOR START-UP TIME CAN AFFECT UP TO THE FIRST TWO FRAMES FOLLOWING EACH "CAMERA ON" COMMAND.

ACTION: NONE.

7. COMMENTS:

A. BICOLOR: MISSION 1104 ACQUIRED A VERY LIMITED AMOUNT OF BICOLOR PHOTOGRAPHY (4 DOMESTIC PASSES, 1 DENIED AREA PASS). THE PHOTOINTERPRETERS REPORTED THAT, "THE AFT CAMERA IMAGERY, EXPOSED THROUGH THE SF-05 COVERAGE IS POOR". THE IMAGE QUALITY IS POOR DUE TO THE USE OF A POOR QUALITY FILTER AND IS NOT INHERENT IN THE BICOLOR PROCESS. BICOLOR (SF-05) PHOTOGRAPHY HAS BEEN ACQUIRED ON MISSIONS 1102, 1103 AND 1104. MISSION 1102, EMPLOYING A HIGH QUALITY FILTER

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PRODUCED IMAGERY WHICH ACCORDING TO [] IS COMPARABLE WITH NORMAL J-1 PERFORMANCE. WITH GOOD SF-05 FILTERS, THIS IS THE KIND OF PERFORMANCE THAT CAN BE EXPECTED FROM THE BICOLOR MODE. THE FOLLOWING POINTS SHOULD BE MADE RELATIVE TO THE SF-05 FILTER USED ON MISSION 1104.

(1) THIS FILTER WAS FLOWN BECAUSE IT WAS THE ONLY SF-05 AVAILABLE AT THE TIME. IT WAS DETERMINED JUST PRIOR TO LAUNCH THAT THE FILTER WAS POOR. FOR THIS REASON, ONLY MINIMAL BICOLOR WAS RECOMMENDED, PARTICULARLY OVER DENIED AREAS; ONLY ONE OPERATIONAL BICOLOR PASS (REV 7) WAS TAKEN.

(2) PRE-FLIGHT TESTS HAD INDICATED THAT THE SF-05 HAD A LOSS IN RESOLUTION OF APPROXIMATELY 30 PERCENT AS COMPARED TO PREVIOUSLY USED FILTERS. THIS WAS THE MAJOR PROBLEM WITH THE FILTER ON 1104.

(3) THE SPECTRAL BAND PASS OF THIS FILTER WAS NOT AS IT SHOULD HAVE BEEN. IN PARTICULAR, THE LONG WAVELENGTH CUT-OFF WAS 590 MILLIMICRONS INSTEAD OF 610 MILLIMICRONS. THIS HAS THREE EFFECTS. FIRST, IT CAUSED THE FILTER FACTOR TO BE INCREASED FROM 2.8 TO 3.0. THIS ITSELF IS NOT A SIGNIFICANT PROBLEM. SECONDLY, IT CAUSED A REDUCTION IN CONTRAST BY ELIMINATING THE 590-610 MILLI-

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MICRON REGION. THIS ALSO IS ONLY A MINOR CONTRIBUTOR TO QUALITY DEGRADATION. THIRDLY, AND MORE IMPORTANT, THE SHIFT IN THE FILTER'S BAND PASS TOWARD THE SHORTER WAVELENGTHS CAUSED AN ADDITIONAL LOSS IN RESOLUTION DUE TO POORER LENS PERFORMANCE IN THAT SPECTRAL REGION.

[] HAS TAKEN THE ACTION TO PROCURE ADDITIONAL SF-05 FILTERS. THESE FILTERS WILL BE EXTENSIVELY TESTED FOR OPTICAL QUALITY AND SPECTRAL TRANSMISSION PRIOR TO INCLUSION IN THE SYSTEM. IN THE FUTURE, ONLY HIGH QUALITY SF-05 FILTERS WILL BE EMPLOYED.

B. SO-180 ENGINEERING TEST: THIS MISSION CONTAINED 800 FEET OF TYPE SO-180, EKTACHROME [] AERO COLOR FILM, ON THE END OF THE FWD CAMERA. THIS TEST WAS RUN AS PART OF THE J-3 SYSTEM CAPABILITY

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STUDIES AND HAS THE PRIME PURPOSE OF INVESTIGATING THE CAPABILITY OF THE CORONA SYSTEM TO HANDLE TYPE SO-180 FILM. PORTIONS OF THE SO-180 FILM EXHIBITED EXCELLENT EXPOSURE, COLOR BALANCE AND RESOLUTION COMPATIBLE WITH THE MAXIMUM THAT COULD BE ACHIEVED WITH THIS FILM/CAMERA COMBINATION. (THE LIMITING PERFORMANCE FACTOR WAS THE RECOGNIZED LOWER RESOLUTION CAPABILITY OF TYPE SO-180 FILM COMPARED TO 3404). WHEN THE WEATHER CONDITIONS WERE FAVORABLE, AND THERE WERE NO DEGRADING EFFECTS (I.E., STATIC MARKING) THE PET ESTIMATES THE

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GROUND RESOLVED DISTANCE OF FILM TYPE SO-180 TO HAVE BEEN APPROXIMATELY 25 FEET. IT HAS BEEN REPORTED PREVIOUSLY THAT SIGNIFICANT PORTIONS OF THE TEST WAS DEGRADED BY ELECTROSTATIC DISCHARGE WHICH RECORDED AS A RED IMAGE ON FILM TYPE SO-180. THERE WAS A SECOND ANOMALY THAT CAUSED A HEAVY BLUISH/GREEN CAST ON FILM TYPE SO-180 OVER THE ENTIRE FORMAT ON THE FIRST FEW FRAMES OF EACH OPERATION. THE CORONA DISCHARGE DEGRADATIONS CAN BE ATTRIBUTED DIRECTLY TO THE FAILURE OF THE PRESSURE MAKEUP UNIT (PMU). PERTINENT COMMENTS FOLLOW.

(1) STATIC MARKING: SOME OF THE IMAGERY CONTAINS CORONA AND ELECTROSTATIC FOG WHICH APPEARS RED ON FILM TYPE SO-180. THIS CONDITION VARIES FROM NO MARKING TO EXTREMELY SEVERE MARKING. THIS CONDITION OCCURS ON THOSE OPERATIONS WHEN THE PMU PROVIDED SYSTEM PRESSURES OTHER THAN DESIRED.

PRIOR TO MISSION 1104, THE SO-180 RECEIVED EXTENSIVE ALTITUDE ENVIRONMENTAL AND SYSTEM CAPABILITY TESTING AT []

[] THE ALTITUDE TESTS WERE ACCOMPLISHED AT INTERNAL CAMERA PRESSURES FROM LESS THAN ONE MICRON THROUGH 160 MICRONS UTILIZING INCREMENTAL PRESSURE STEPS AND PRESSURE SWEEPS. AS A DIRECT RESULT OF THESE TESTS, TWO CORONA FREE WINDOWS WERE ESTABLISHED. ONE WINDOW EXTENDED FROM 12 TO 22 MICRONS,

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AND THE OTHER WINDOW WAS LOCATED ABOVE 160 MICRONS. THE 12 TO 22 MICRON WINDOW WAS UTILIZED AS BEING MORE COMPATIBLE WITH THE CURRENT PMU SYSTEM. IT SHOULD BE EMPHASIZED THAT DURING SYSTEM ENVIRONMENTAL TESTING, WHEN PRESSURE WAS MAINTAINED AT THE 12-22 MICRON REGION, THE SO-180 WAS COMPLETELY CLEAR OF CORONA MARKING. THE 12-22 MICRON REGION IS NOT THE NORMAL IDLING PRESSURE FOR 3404 AND HENCE A MODIFICATION WAS MADE TO THE CR-4 PMU TO PERMIT MAINTENANCE OF THE REQUIRED PRESSURE DURING THE SO-180 PORTION OF THE MISSION.

THE CR-4 PMU MALFUNCTIONED BECAUSE OF A LEAKY REGULATOR THAT PERMITTED EXCESSIVE GAS DEPLETION AT RANDOM TIMES THROUGHOUT THE MISSION. AT THE END OF THE MISSION (DURING SO-180 OPERATION), THE REGULATOR CAUSED PRESSURES OUTSIDE THE SO-180 CORONA-FREE RANGE. THIS CONTRIBUTED TO THE STATIC DISCHARGE RECORDED ON THE SO-180 FILM.

THE MALFUNCTION WAS NOT ASSOCIATED WITH THE SPECIAL PMU CONFIGURATION INSTALLED FOR SO-180, BUT FROM CONTAMINATION OF THE REGULATOR USED AS FLIGHT STANDARD PMU EQUIPMENT. PROBABLE CAUSE OF CONTAMINATION WAS EVIDENCED BY CHIPS FOUND DURING DISASSEMBLY OF THE CR-5 PMU REGULATOR. [] CONDUCTED A THOROUGH INVESTIGATION AT THE SUPPLIER'S PLANT. THE INVESTIGATION RESULTED IN UPGRADING PROCEDURES, MORE STRINGENT CLEAN ROOM DISCIPLINE AND SEVERAL DESIGN CHANGES TO INSURE AGAINST CONTAMINATION. A SPECIAL GROUP OF [] PARENT COMPANY QUALITY CONTROL TROUBLESHOOTERS ARE ALSO VISITING THE SUPPLIER TO INSURE COMPLIANCE WITH THE PROCEDURES.

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C. THIRD GENERATION LENSES: THE PERFORMANCE SUMMARY REPORTED THAT THE FWD LOOKING CAMERA IMAGERY WAS SUPERIOR TO THAT OF THE AFT LOOKING AND THAT THIS IS DIRECTLY ATTRIBUTABLE TO THE USE OF A THIRD GENERATION PETZVAL LENS IN THE FWD UNIT. THE THIRD GENERATION LENS WAS DESIGNED SPECIFICALLY TO BE USED WITH THE WRATTEN PAGE 3 4592 T O P S E C R E T 25 (VICE WRATTEN 21) FILTER. THIS PROVIDES AN IMPROVEMENT IN PERFORMANCE, FOR THE THIRD GENERATION LENS, OF APPROXIMATELY 20 PERCENT (2:1 LOW CONTRAST RESOLUTION UNDER DYNAMIC CONDITIONS) OVER THE SECOND GENERATION LENSES. IN THE FUTURE ALL CR SYSTEMS WILL HAVE A THIRD GENERATION LENS IN THE FWD CAMERA, WITH UNITS CR-10, 13 AND UP HAVING THIRD GENERATION LENSES IN BOTH CAMERAS. IT SHOULD BE NOTED THAT THE IMPROVED DESIGN OF THE THIRD GENERATION LENS ALSO PROVIDES IMPROVED PERFORMANCE (COMPARED WITH SECOND GENERATION LENSES) WITH THE WRATTEN 21 FILTER.

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D. DUAL GAMMA PROCESSING: THE TYPE 3404 FILM IN BOTH 1104-1 AND 1104-2 WAS PROCESSED USING THE DUAL GAMMA TECHNIQUE. THIS WAS THE FIRST MISSION WHERE THE ENTIRE BLACK AND WHITE FILM LOAD OF THE MAIN CAMERA WAS PROCESSED WITH THIS TECHNIQUE. IT IS FELT THAT THE ADVANTAGES OF THIS PROCESS CONTRIBUTED TO THE GENERAL GOOD QUALITY OF THE PHOTOGRAPHIC IMAGERY.

E. CROSS-TRACK SMEAR: THE LEVEL OF PERFORMANCE OF THE FORWARD LOOKING LENS (THIRD GENERATION) WAS SUFFICIENTLY HIGH TO OCCASIONALLY ENABLE DETECTION OF CROSS-TRACK SMEAR IN THE IMAGERY. THE MOST OBVIOUS INSTANCE BEING THE CORN DISPLAY ON PASS D16 WHERE GROUND RESOLUTION WAS FIVE FEET ALONG TRACK

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IN MANY OPERATIONS THE AFT CAMERA PERFORMANCE WAS ALSO SUFFICIENT TO IDENTIFY CROSS-TRACK SMEAR CONTRIBUTIONS. IN SUCH INSTANCES, IT WAS OBSERVED THAT THE CROSS-TRACK SMEAR RECORDED IN THE AFT PHOTOGRAPHY WAS LESS THAN THAT IN THE FORWARD. THIS RELATIONSHIP IS DIRECTLY RELATED TO THE SHORTER EXPOSURE TIME OF THE AFT CAMERA. THIS IS A GRAPHIC EXAMPLE OF THE DESIRABILITY TO REDUCE CROSS-TRACK SMEAR BY REDUCTIONS IN EXPOSURE TIME THROUGH USE OF MORE SENSITIVE FILMS. IN THIS REGARD THE PET REAFFIRMS ITS INTEREST IN FLYING SO-230/SO-205 IN THE CORONA SYSTEM AS SOON AS IS PRACTICAL.
T O P S E C R E T

END OF MESSAGE

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